APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/591,122	06/09/2000	Joseph L. Hellerstein	YOR000146US1	3432

7590 02/26/2004		EXAMINER
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ART UNIT	PAPER NUMBER
2123	6

DATE MAILED: 02/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>24 November 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-20</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-20</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>24 November 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Introduction

1.   This communication is in response to the Applicant's Response mailed on

November 24, 2003. Claims 1-20 of the application are pending. This office action is

made non-final.

Response to Arguments

2.   Applicant's arguments filed on November 24, 2003 have been fully considered.

Applicants' arguments, filed on November 24, 2003 under 35 U.S.C. §102 (e) and 35

U.S.C. §103 (a) are persuasive. The art rejections are based on the additional prior art

included in this office action.

Drawings

3.   The drawings submitted on November 24, 2003 are accepted.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1, 8-10 and 17-19 are rejected under 35 U.S.C. 102(b) as being anticipated by

Kim et al. (KI) (U.S. Patent 5,793,429).

5.1   **KI** teaches methods of estimating motion in image data and apparatus for performing

same. Specifically, as per Claim 1, **KI** teaches an apparatus for providing on-line adaptive

predictions for use by one or more applications used in association with one or more operations

for which predictions may be requested (CL4, L24-30; Fig 6; Fig 7-9);

the predictions being performed in accordance with at least one model which includes

one or more sub-models (CL3, L53-67; CL4, L27-48); the apparatus comprising:

at least one processor (Fig 6, Item 30);

operative to at least one of: (i) adapt at least one of the one or more sub-models, to be

used in computing on-line predictions, when a change is detected in data associated with the one

or more operations for which predictions may be requested (CL4, L54-65; CL4, L27-30); and

(ii) compute one or more predictions, in response to one or more requests from the one or

more applications, using the one or more sub-models determined to provide an optimum

prediction combination (CL4, L54-65; CL3, L53-67).

5.2   As per claim 8, **KI** teaches the apparatus of Claim 1. **KI** also teaches that the prediction

computing operation further comprises computing a prediction for each of the one or more

sub-models determined to provide the optimum prediction combination (CL4, L54-65; CL3,

L53-67).

5.3   As per claim 9, **KI** teaches the apparatus of Claim 8.   **KI** also teaches that the prediction

computing operation further comprises combining the results of the one or more computed

predictions (CL 3, L53-62).

5.4   As per Claims 10 and 19, these are rejected based on the same reasoning as Claim 1,

supra. Claims 10 and 19 are method and article of manufacture claims reciting the same

limitations as Claim 1 above, as taught throughout by **KI**.

5.5   As per Claims 17 and 18, these are rejected based on the same reasoning as Claims 8 and

9, supra. Claims 17 and 18 are method claims reciting the same limitations as Claims 8 and 9

above, as taught throughout by **KI**.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

7.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459

(1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

    1.   Determining the scope and contents of the prior art.
    2.   Ascertaining the differences between the prior art and the claims at issue.
    3.   Resolving the level of ordinary skill in the pertinent art.
    4.   Considering objective evidence present in the application indicating obviousness
          or nonobviousness.

8.   Claims 2-3, 6-7, 11-12, 15-16 and 20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over **Kim et al. (KI)** (U.S. Patent 5,793,429) in view of **Hellerstein et al. (HE)**

(IEEE, May 1999).

8.1   As per claim 2, **KI** teaches the apparatus of Claim 1. **KI** does not expressly teach that

the adapting operation further comprises estimating one or more parameters associated with each

of the one or more sub-models based on data received with respect to the detected change. **HE**

teaches that the adapting operation further comprises estimating one or more parameters

associated with each of the one or more sub-models based on data received with respect to the

detected change (Page 311, Para 4 to Page 312, Para 2; Page 313, Para 3 to Page 314, Para 2), as

that enables predicting the time-varying or nonstationary behavior of the measurement variable

and the stationary, time-serial dependencies of the variable (Page 311, Para 4; Page 312, Para 2;

Page 314, Para 2). It would have been obvious to one of ordinary skill in the art at the time of

Applicants' invention to modify the apparatus of **KI** with the apparatus of **HE** that included the

adapting operation further comprising estimating one or more parameters associated with each of

the one or more sub-models based on data received with respect to the detected change, as that

would enable predicting the time-varying or nonstationary behavior of the measurement variable

and the stationary, time-serial dependencies of the variable.

8.2   As per claim 3, **KI** and **HE** teach the apparatus of Claim 2. **KI** does not expressly teach

that the one or more estimated parameters for a sub-model are used to update a descriptor

associated with the sub-model. **HE** teaches that the one or more estimated parameters for a

sub-model are used to update a descriptor associated with the sub-model (Page 312, Para 2; Page

314, Para 2), as that allows using appropriate model for predicting the time-varying or

nonstationary behavior of the measurement variable and the stationary, time-serial dependencies

of the variable (Page 311, Para 6; Page 312, Para 1 and 2; Page 314, Para 2). It would have been

obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the

apparatus of **KI** with the apparatus of **HE** that included the one or more estimated parameters for

a sub-model being used to update a descriptor associated with the sub-model, as that would allow

using appropriate model for predicting the time-varying or nonstationary behavior of the

measurement variable and the stationary, time-serial dependencies of the variable.

8.3   As per claim 6, **KI** teaches the apparatus of Claim 1. **KI** does not expressly teach that a

sub-model maintains data used to estimate one or more parameters associated therewith. **HE**

teaches that a sub-model maintains data used to estimate one or more parameters associated

therewith (Page 311, Para 4 to Page 312, Para 2; Page 313, Para 3 to Page 314, Para 2), as that

enables predicting the time-varying or nonstationary behavior of the measurement variable and

the stationary, time-serial dependencies of the variable (Page 311, Para 4; Page 312, Para 2; Page 314, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **KI** with the apparatus of **HE** that included a sub-model maintaining data used to estimate one or more parameters associated therewith, as that would allow predicting the time-varying or nonstationary behavior of the measurement variable and the stationary, time-serial dependencies of the variable.

8.4   As per claim 7, **KI** teaches the apparatus of Claim 1.   **KI** does not expressly teach that a sub-model at least one of computes and stores one or more values associated with one or more sub-model parameters. **HE** teaches that a sub-model at least one of computes and stores one or more values associated with one or more sub-model parameters (Page 311, Para 4 to Page 312, Para 2; Page 313, Para 3 to Page 314, Para 2), as that enables predicting the time-varying or nonstationary behavior of the measurement variable and the stationary, time-serial dependencies of the variable (Page 311, Para 4; Page 312, Para 2; Page 314, Para 2). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the apparatus of **KI** with the apparatus of **HE** that included a sub-model at least one of computing and storing one or more values associated with one or more sub-model parameters, as that would allow predicting the time-varying or nonstationary behavior of the measurement variable and the stationary, time-serial dependencies of the variable.

8.5   As per Claims 11-12 and 15-16, these are rejected based on the same reasoning as Claims

2-3 and 6-7, supra. Claims 11-12 and 15-16 are method claims reciting the same limitations as

Claims 2-3 and 6-7 above, as taught throughout by **KI** and **HE**.

8.6   As per Claim 20, this is rejected based on the same reasoning as Claim 6, supra. Claim

20 is an article of manufacture claim reciting the same limitations as Claim 6 above, as taught

throughout by **KI** and **HE**.

9.   Claims 4-5 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kim et al. (KI) (U.S. Patent 5,793,429) in view of **Hellerstein et al (HE)** (IEEE, May 1999),

and further in view of **Hellerstein et al (HEL)** (1998 Conference of the computer measurement

Group, December 1998).

9.1   As per claim 4, **KI** and **HE** teach the apparatus of Claim 2. **KI** does not expressly teach

the adapting operation further comprises testing for a change-point condition. **HEL** teaches the

adapting operation further comprises testing for a change-point condition (Page 11, Para 6 to

Page 12, Para 1), as that allows detection of anomalies, such as an increase in the mean or

variance, using an on-line technique that examines the observations in sequence (Page 11, Para 6

to Page 12, Para 1). It would have been obvious to one of ordinary skill in the art at the time of

Applicants' invention to modify the apparatus of **KI** with the apparatus of **HEL** that included

adapting operation further comprising testing for a change-point condition, as that would allow

detection of anomalies, such as an increase in the mean or variance, using an on-line technique that examines the observations in sequence.

9.2   As per claim 5, **KI, HE** and **HEL** teach the apparatus of Claim 4. **KI** also teaches the adapting operation further comprises determining an optimum combination of sub-models, that may be used to compute at least one of the requested predictions, in view of the detected change (CL4, L54-65; CL3, L53-67).

9.3   As per Claims 13-14, these are rejected based on the same reasoning as Claims 4-5, supra. Claims 13-14 are method claims reciting the same limitations as Claims 4-5 above, as taught throughout by **KI** and **HE**.

Arguments

10.1   As per the applicants' argument that "Hellerstein does not teach or suggest anything related to managing multiple sub-models", the examiner has used a new reference (**KI**). **KI** teaches the predictions being performed in accordance with at least one model which includes one or more sub-models (CL3, L53-67; CL4, L27-48)

10.2   As per the applicants' argument that "Hellerstein/Basseville combination is improper under 35 USE 103 (c), as adapted for cases filed on or after November 29, 1999, since the subject matter qualifies as prior art only under subsection (e) of 102 and the subject matter and

the claimed invention were at the time, the invention was made, owned by the same person or

subject to obligation of assignment to the same person", the examiner has used a new references

(**KI, HE** and **HEL**) and the **HE** and **HEL** references qualify under 102 (b).

Conclusion

11.   The prior art made of record and not relied upon is considered pertinent to the
Applicants' disclosure.

        The following patents and papers are cited to further show the state of the art at
the time of Applicants' invention with respect to adaptive prediction and adaptive control
using multiple models and sub-models and change point detection .

1. Lee et al., "Execution of multiple models using data segmentation", U.S.
    Patent 6,542,894, April 2003.

2. Martin et al., "Surfaid predictor: Web-based system for predicting surfer
    behavior", U.S. Patent 6,338,066, January 2002.

3. Doya et al., "Agent learning machine", U.S. Patent 6,529,887, March 1993.

4. Riis, "Combining neural networks for protein secondary structure prediction",
    IEEE, 1995.

12.   Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is

703-305-0043. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

K. Thangavelu
Art Unit 2123
February 18, 2004